

Appl. No. 09/742,830
Amdt. dated 4/13/04

Amendments to the Specification

Please replace the paragraph beginning at page 2, line 25, with the following rewritten paragraph:

-- However, relatively higher melt-flow rate polymers have been successfully utilized heretofore in spinning fine denier thermoplastic polymer fibers. US Patent No. 5,681,646 to Ofosu et al. teaches that high melt-flow rate polymers, such as polypropylene having a MFR of between about 50 and 150 g/10 minutes, can be used to make high strength fibers. In addition, use of such high melt-flow rate polymers is also taught in US Patent No. 5,672,415 to Sawyer et al. More particularly, Sawyer Sawyer et al. teaches a multicomponent fiber having a first ethylene polymer component having a melt-index between 60-400 g/10 minutes and a second propylene polymer component having a melt-flow rate between 50-800 g/10 minutes. Use of the relatively high melt-flow rate polymers provides fine fibers, enhances crimp and also improves certain aspects of the spinning process. However, while relatively higher melt-flow rate polymers are taught in Sawyer et al., the examples of Sawyer et al. employ polymeric components having relatively similar melt-flow rates. Use of disparate melt-flow rates would be expected to create problems in the spinning and/or melt-attenuation steps such as, for example, fiber breakage. --

Please replace the paragraph beginning at page 3, line 20, with the following rewritten paragraph:

-- The aforesaid needs are fulfilled and the problems experienced by those skilled in the art overcome by a method of the present invention, comprising the steps of (i) extruding a first molten thermoplastic polymer and a second molten thermoplastic polymer and forming a unitary multicomponent thermoplastic polymer ~~filament;~~ filament, and (ii) melt-attenuating the filament with a drawing force of at least 3 psig and/or reducing the diameter of the extruded filament by at least about 75%. In addition, the first thermoplastic polymer desirably has a melt-flow rate at least three times (3x) that of the second thermoplastic polymer component and, further, the second thermoplastic polymer component desirably comprises a major portion of the outer surface of the filament. --

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Please replace the paragraph beginning at page 8, line 3, with the following rewritten paragraph:

-- Low melt-flow rate polymers suitable for spinning are known in the art and are commercially available from a variety of vendors. Exemplary low MFR polymers include, but are not limited to, ESCORENE polypropylene available from the Exxon Chemical Company of Houston, TX, and 6811A polyethylene available from the Dow Chemical Company. High MFR polymers can be catalyzed and/or produced by various methods known in the art. As an example, high MFR polyolefins may be achieved when starting with a conventional low melt-flow polyolefin through the action of free radicals which degrade the polymer to increase melt-flow rate. Such free radicals can be created and/or rendered more stable through the use of a pro-degradant such as peroxide, an organo-metallic compound or a transition metal oxide. Depending on the prodegradant chosen, stabilizers may be useful. One example of a way to make a high melt-flow polyolefin from a conventional low melt-flow polyolefin is to incorporate a peroxide into the polymer. Peroxide addition to polymers is taught in U.S. Pat. No. 5,213,881 to Timmons et al. and peroxide addition to polymer pellets is described in U.S. Pat. No. 4,451,589 to Morman et al., the entire contents of each of the aforesaid references are incorporated herein by reference. Peroxide addition to a polymer for spunbonding applications can be done by adding up to 1000 ppm of peroxide to commercially available low melt-flow rate polyolefin polymer and mixing thoroughly. The resulting modified polymer will have a melt-flow rate of approximately two to three times that of the starting polymer, depending upon the rate of peroxide addition and mixing time. In addition, suitable high MFR polymers can comprise polymers having a narrow molecular weight distribution and/or low polydispersity (relative to conventional olefin polymers such as those made by Ziegler-Natta catalysts) and include those catalyzed by "metallocene catalysts", "single-site catalysts", "constrained geometry catalysts" and/or other like catalysts. Examples of such catalysts and/or olefin polymers made therefrom are described in, by way of example only, U.S. Patent No. 5,153,157 to Canich, U.S. Patent No. 5,064,802 to Stevens et al., U.S. Patent 5,374,696 to Rosen et al. U.S. Patent No. 5,451,450 to Elderly Elderly et al.; U.S. Patent No. 5,204,429 to Kaminsky et al.; U.S. Patent No. 5,539,124 to Etherton et al., U.S. Patent Nos. 5,278,272 and 5,272,236, both to Lai et al., U.S. Patent No. 5,554,775 to Krishnamurti et al. and U.S. Patent No. 5,539,124 to Etherton et al. Examples of suitable commercially available polymers having a high MFR include, but are not limited to, 3746G polypropylene (1100 MFR) from Exxon Chemical Company, 3505 polypropylene (400 MFR) from Exxon Chemical Company and PF015 polypropylene (800 MFR) from Montell Polyolefins. --

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Please replace the paragraph beginning at page 13, line 6, with the following rewritten paragraph:

-- The sheath component ~~comprises~~ comprised linear low density polyethylene having a MFR of 35 g/10 minutes (6811A polyethylene available from the Dow Chemical Company) and the core component comprised polypropylene having a MFR of 400 g/10 minutes (3445 polypropylene available from Exxon Chemical Company). The ratio of the sheath and core polymeric components was 50:50 (i.e. each polymer component comprised about 50%, by volume, of the fiber). The bicomponent fibers were spun as indicated above and produced an insignificant number of fiber breaks. The draw force upon the fibers was approximately 6 psig and the nonwoven web produced therefrom comprised fibers having an average fiber size of 17.7 micrometers and a denier of approximately 2. --

Please replace the paragraph beginning at page 13, line 17, with the following rewritten paragraph:

-- The sheath component ~~comprises~~ comprised linear low density polyethylene having a MFR of 35 g/10 minutes (6811A polyethylene available from the Dow Chemical Company) and the core component comprised polypropylene having a MFR of 400 g/10 minutes (3445 polypropylene available from Exxon Chemical Company). The ratio of the sheath and core polymeric components was 50:50 (i.e. each polymer component comprised about 50%, by volume, of the fiber). The bicomponent fibers were spun as indicated above and produced an insignificant number of fiber breaks. The draw force upon the fibers was approximately 3 psig and the nonwoven web produced therefrom comprised fibers having an average fiber size of 21.6 micrometers and a denier of approximately 2.95. --

Please replace the paragraph beginning at page 13, line 28, with the following rewritten paragraph:

-- The sheath component ~~comprises~~ comprised linear low density polyethylene having a MFR of 35g/10 minutes (6811A polyethylene available from the Dow Chemical Company) and the core component : comprised polypropylene having a MFR of 400 g/10 minutes (3505 polypropylene available from Exxon Chemical Company). The ratio of the sheath and core polymeric components was 30:70. The bicomponent fibers were spun as indicated above and produced an insignificant number of fiber breaks. The draw force upon the fibers was approximately 6 psig and the nonwoven web produced therefrom comprised fibers having an average fiber size of 16.4 micrometers and a denier of approximately 1.7. --

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Please replace the paragraph beginning at page 14, line 2, with the following rewritten paragraph:

-- The sheath component ~~comprises~~ comprised linear low density polyethylene having a MFR of 35 g/10 minutes (6811A polyethylene available from the Dow Chemical Company) and the core component comprised polypropylene having a MFR of 800 g/10 minutes (PF015 polypropylene available from montell polyolefins). The ratio of the sheath and core polymeric components was 50:50. The bicomponent fibers were spun as indicated above and produced an insignificant number of fiber breaks. The draw force upon the fibers was approximately 6 psig and the nonwoven web produced therefrom comprised fibers having an average fiber size of 16.3 micrometers and a denier of approximately 1.8. --